National Institute of Environmental Health Sciences

Sustainable diets for the future: Can we contribute to reducing greenhouse gas emissions by eating a healthy diet?

Author(s): Macdiarmid JI, Kyle J, Horgan GW, Loe J, Fyfe C, Johnstone A, McNeill G
Year: 2012
Journal: The American Journal of Clinical Nutrition. 96 (3): 632-639

Abstract:

BACKGROUND: Food systems account for 18-20% of UK annual greenhouse gas emissions (GHGEs). Recommendations for improving food choices to reduce GHGEs must be balanced against dietary requirements for health. OBJECTIVE: We assessed whether a reduction in GHGEs can be achieved while meeting dietary requirements for health. DESIGN: A database was created that linked nutrient composition and GHGE data for 82 food groups. Linear programming was used iteratively to produce a diet that met the dietary requirements of an adult woman (19-50 y old) while minimizing GHGEs. Acceptability constraints were added to the model to include foods commonly consumed in the United Kingdom in sensible quantities. A sample menu was created to ensure that the quantities and types of food generated from the model could be combined into a realistic 7-d diet. Reductions in GHGEs of the diets were set against 1990 emission values. RESULTS: The first model, without any acceptability constraints, produced a 90% reduction in GHGEs but included only 7 food items, all in unrealistic quantities. The addition of acceptability constraints gave a more realistic diet with 52 foods but reduced GHGEs by a lesser amount of 36%. This diet included meat products but in smaller amounts than in the current diet. The retail cost of the diet was comparable to the average UK expenditure on food. CONCLUSION: A sustainable diet that meets dietary requirements for health with lower GHGEs can be achieved without eliminating meat or dairy products or increasing the cost to the consumer.

Source: http://dx.doi.org/10.3945/ajcn.112.038729

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Unspecified Exposure

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : UK

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Methodology

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified